ASSIGNMENT 6

Textbook Assignment: "Instruments," Shipboard Electrical Equipment," and "Environmental Controls," chapters 11, 12, and 13, pages 11-1 through 13-7.

- 6-1. In a shipboard engineering plant, the instruments let operating personnel perform which of the following tasks?
 - Determine if machinery is operating within a prescribed range
 - 2. Determine the operating efficiency of the plant
 - Provide data for reports and records
 - 4. Each of the above
- 6-2. On a pressure gauge, the red hand (if installed) should be set at what point?
 - 1. Zero
 - 2. Slightly above the maximum normal operating pressure only
 - Slightly below the minimum normal operating pressure only
 - 4. Slightly above or slightly below the maximum or minimum normal operating pressure
- 6-3. A Bourdon-tube gauge operates on what principal?
 - 1. Volume changes in a straight tube tend to expand the tube
 - 2. Volume changes in a coiled tube tend to collapse the tube
 - 3. Pressure in a straight tube tends to bend the tube
 - 4. Pressure in a curved tube tends to straighten the tube
- 6-4. If a curved Bourdon tube is used to measure pressure that exceeds 200 psi, it is made from what metal?
 - 1. Copper
 - 2. Bronze
 - 3. Steel
 - 4. Lead

- 6-5. In a simplex gauge, the free end of the Bourdon tube is attached to the indicating mechanism by a
 - 1. linkage assembly
 - 2. wire
 - 3. cam
 - 4. bellows assembly
 - 6-6. You would use a simplex Bourdontube gauge if you were taking which of the following measurements?
 - The water depth in a freshwater tank
 - 2. The amount of fuel oil flowing through a valve
 - 3. The pressure in a compressed air system
 - 4. The pressure drop between the inlet and the outlet side of a lube oil strainer
 - 6-7. Vacuum gauges, which are used to indicate pressures below atmospheric pressure, have which of the following units of measurement?
 - 1. Inches of water
 - 2. Inches of mercury
 - 3. Pressure per inch
 - 4. Pressure per square inch
 - 6-8. What Bourdon-tube gauge should you use to take pressure and vacuum measurements?
 - 1. Duplex
 - 2. Simplex
 - 3. Compound
 - 4. Differential
 - 6-9. What type of gauge should be installed to check the pressure between the inlet and outlet sides of lube oil strainers?
 - 1. Duplex
 - 2. Simplex
 - 3. Compound
 - 4. Diaphragm

- 6-10. A bellows gauge can be used to take which of the following measurements?
 - 1. Pressure up to 800 psig
 - 2. Low pressures
 - 3. Small pressure differentials
 - 4. Each of the above
- 6-11. To measure pressure in the space between the inner and outer boiler casings, which of the following types of gauges is generally used?
 - 1. A compound Bourdon-tube gauge
 - 2. A duplex Bourdon-type gauge
 - 3. A diaphragm gauge
 - 4. A bellows gauge
- 6-12. A U-tube that is open to the atmosphere at one end and connected to a pressure source at the other end is known as a
 - 1. bellows
 - 2. manometer
 - 3. diaphragm
 - 4. Bourdon tube
- 6-13. The liquid in the capillary bore of a liquid-in-glass thermometer responds to a change in temperature by expanding or contracting, which causes what type of change, if any, in the thermometer graduations?
 - 1. Relatively large
 - 2. Relatively small
 - 3. Inversely proportional
 - 4. None
- 6-14. The element of a bimetallic expansion thermometer responds to a rise in temperature in what way?
 - 1. By rising
 - 2. By contracting
 - 3. By changing colors
 - 4. By changing the curvature

- 6-15. Which of the following is NOT a component of a distant-reading thermometer?
 - 1. Bulb
 - 2. Capillary tube
 - 3. Thermocouple
 - 4. Bourdon tube
 - 6-16. Aboard ship, the exhaust temperature of diesel engines and heat-treatment furnaces is measured using what instrument?
 - 1. A distant-reading thermometer
 - 2. A bimetallic thermometer
 - 3. A resistance thermometer
 - 4. A pyrometer
 - 6-17. The metals that make up the actuating element of a pyrometer respond to a rise in temperature by producing a/an
 - 1. chemical reaction
 - 2. electrical current
 - 3. mechanical change
 - 6-18. In the newer propulsion plants, temperatures are remotely monitored. Thermocouple temperature detectors are used with what other components to provide indications and alarms to the various engineering consoles?
 - 1. Signal conditioners
 - 2. Signal multipliers
 - 3. Signal processors
 - 4. Signal reversers
 - 6-19. A resistive temperature detector (RTD) with a nickel element Is used to measure temperatures in which of the following ranges?
 - 1. 400° to 600°F
 - 2. 600° to 800 °F
 - 3. 800° to 1,000°F
 - 4. 1,000° to 1,200°F

- 6-20. or greater service are made of what metal?
 - 1. Copper
 - 2. Nickel
 - 3. Platinum
 - 4. Silver
- 6-21. As temperature increases around an RTD, what will happen to the corresponding resistance of the RTD?
 - 1. It remains the same
 - 2. It increases by a proportional value
 - 3. It decreases by a proportional value
 - 4. It fluctuates erratically
- You are troubleshooting an RTD circuit. What is indicated by a very low or zero meter reading?
 - 1. A short circuit
 - 2. An open circuit
 - 3. An abnormal reading; but not an immediate problem condition
 - 4. A normal reading; circuit malfunction is not indicated
- If the RTD of a 0° to 300°F meter 6-23. were to open, you would expect to receive which of the following indications?
 - 1. 100°F
 - 2. 200°F
 - 3. 300 °F
 - 4. 0°F
- 6-24. At the shipboard level, what corrective maintenance should you perform on a defective RTD?
 - 1. Remove the RTD and repair it in the shop
 - 2. Remove the RTD and replace it with a new one
 - 3. Repair the RTD in place

- The RTD elements designed for 600°F 6-25. Meters on control consoles display units of pressure or temperature; but, they are actually what type of meter?
 - 1. Ohmmeter
 - 2. Ammeter
 - 3. Dc voltmeter
 - 4. Wattmeter
 - 6-26. Voltmeters installed in switchboards (SWBD) and control consoles all have what type of resistive value?
 - 1. Adjustable
 - 2. Variable
 - 3. Fixed
 - 4. Indefinite
 - 6-27. To allow an ammeter to handle high SWBD current, what component is installed with it?
 - 1. A current transformer
 - 2. A potential transformer
 - 3. A step-down transformer
 - 4. A step-up transformer
 - 6-28. A failing generator is being operated in parallel with a good generator. Normally, the loss of which of the following outputs indicates this condition?
 - 1. Voltage
 - 2. Amperage
 - 3. Frequency
 - 4. Kilowatt load
 - 6-29. You are observing a synchroscope, and the output frequency of the oncoming generator and the on-line generator is the same. What indication will you receive from the moving element (pointer)?
 - 1. It holds a fixed position
 - 2. It rotates slow in the fast direction
 - 3. It rotates fast in the slow direction
 - 4. It oscillates erratically between the fast and slow directions

- 6-30. What condition is indicated when the three neon lamps located on the face of the phase-sequence indicators are lit?
 - Three cables are connected to the bus
 - 2. The phase-sequence is correct
 - 3. All three phases are energized
 - 4. One of the three fuses has blown
- 6-31. Which of the following sensors is used to determine the specific level in a fuel tank at any given time?
 - 1. Tank level indicator (TLI)
 - 2. Liquid level indicator (LLI)
 - 3. Float level
 - 4. Contact level
- 6-32. A typical TLI transmitter section contains what type of voltage network?
 - 1. Multiplier resistor
 - 2. Multiplier inductor
 - 3. Divider resistor
 - 4. Divider inductor
- 6-33. In a seawater-compensated fuel tank, the float of the TLI is designed to stay at what location?
 - 1. At the top of the fuel
 - 2. At the seawater/fuel interface
 - 3. At the bottom of the seawater
 - 4. Between the seawater/full interface and the top of the tank
- 6-34. To measure the rotational speed of a shaft, what instrument is commonly used?
 - 1. A hydrometer
 - 2. A tachometer
 - 3. A manometer
 - 4. A barometer

- 6-35. The propeller indicator mounted on the propulsion shaft can give which of the following information about the shaft rotation?
 - 1. The direction of rotation
 - 2. The number of revolutions
 - 3. The speed of rotation
 - 4. All of the above
 - 6-36. What tachometer has a flashing light that determines the speed of a rotating shaft?
 - 1. Hand-held mechanical
 - 2. Resonant reed
 - 3. Stroboscope
 - 4. Chronometric
 - 6-37. What instrument is used to indicate the salt content of the ship's distilled water?
 - 1. A liquid level indicator
 - 2. A salinity indicator
 - 3. A pressure indicator
 - 4. A chemical indicator
 - 6-38. To apply a specific, predetermined amount of torsion to a bolt on the main engine, you should use what type of wrench?
 - 1. Torque
 - 2. Rachet
 - 3. Crescent
 - 4. Combustion
 - 6-39. While using a micrometer-setting torque wrench, the user knows the desired torque has been reached when
 - a predetermined setting iniates an audible click
 - 2. the needle reaches the desired torque on the dial indicator
 - 3. the deflecting beam reaches the desired torque
 - 4. the pointer reaches the torque indicator

- 6-40. Before using a torque wrench, you should check which of the following labels?
 - 1. Safety
 - 2. Adjustment
 - 3. Collimation
 - 4. Calibration
- 6-41. Which of the following substances offers resistance to electric current?
 - 1. Iron
 - 2. Copper
 - 3. Aluminum
 - 4. Mica
- 6-42. What term defines the rate at which current passes through a circuit?
 - 1. Ampere
 - 2. volt
 - 3. ohm
 - 4. Watt
- 6-43. A unit of electrical resistance is known as a/an
 - 1. watt
 - 2. ampere
 - 3. ohm
 - 4. volt
- 6-44. A soldering iron is rated at 100 watts. This statement provides which of the following information about the soldering iron?
 - 1. The power consumed by the soldering iron
 - 2. The emf of the iron
 - 3. The resistance of the iron
 - 4. The rate at which current flows through the soldering iron

- 6-45. A shipboard generator operates at maximum efficiency under which of the following conditions?
 - 1. At full-rated load
 - 2. With all batteries fully charged
 - At periods of minimum power demand
 - 4. When in series with other generators of the same rated output
- 6-46. The rotating member of a dc generator is known as the
 - 1. field winding
 - 2. armature
 - 3. rotor
 - 4. yoke
- 6-47. Most emergency generators installed on ships operate at what voltage and frequency, respectively?
 - 1. 450 volts, 60 hertz
 - 2. 220 volts, 50 hertz
 - 3. 450 volts, 50 hertz
 - 4. 110 volts, 60 hertz
- 6-48. Revolving-field generators are superior to revolving-armature generators for which of the following reasons?
 - 1. The load current from the stator is connected to the external circuit without the use of a commutator
 - Only two slip rings are required to supply excitation
 - 3. The stator windings are not subjected to mechanical stresses
 - 4. All of the above

- 6-49.
 - An alternator used with other alternators that automatically goes off when it becomes warm
 A forced air ventilation system
 Ship's service switchboard
 - that circulates air through the stator and rotor
 - 3. A heat-limiting governor that controls the temperature
 - 4. A metal structure surrounded by cold water that encases the alternator parts
- Turbines that drive the ships service generators receive their 6-50. energy from what source?
 - 1. Batteries
 - 2. Diesel engines
 - 3. Saturated steam
 - 4. Superheated steam
- 6-51. Ships generators supply electricity at a constant voltage and frequency. For this to happen, frequency. For this to happen, what condition must be met?
 - 1. A high-frequency output
 - 2. A low-frequency output
 - 3. The turbines must operate at a variable speed to meet demands of variable loads
 - 4. The turbines must operate at a constant speed under variable loads
- Emergency generators are driven by 6-52. diesel power rather than steam turbine power because diesel engines have what advantage?
 - 1. They generate more power than
 - 2. They start faster than turbines
 - 3. They are easier to operate than turbines
 - 4. They are less of a fire hazard than turbines

- A high-speed, turbine-driven alternator is prevented from electrical power used for soverheating by which of the following safety provisions?

 6-53. Special, closely regulated electrical power used for soverheating by which forms following power suppliers? electrical power used for specific loads is furnished by which of the

 - 6-54. Ship's service-generating units and their associated distribution switchboards are interconnected to other distribution switchboards by what circuit?
 - 1. Short
 - 2. Bypass
 - 3. Bus tie
 - 4. Alternator
 - 6-55. During load changes, the automatic voltage regulator maintains a constant voltage by varying the
 - 1. armature resistance
 - 2. field excitation
 - 3. generator speed
 - 4. governor speed
 - 6-56. What device is used to isolate a faulty circuit?
 - 1. A resistor
 - 2. A rectifier
 - 3. A circuit breaker
 - 4. A voltage regulator
 - 6-57. What device maintains the generator voltage to within specified limits?
 - 1. A voltmeter
 - 2. A voltage regulator
 - 3. A circuit generator
 - 4. A resistor regulator
 - 6-58. An ac motor has which of the following advantages over a dc motor?
 - 1. It is larger
 - 2. It is smaller
 - 3. It requires less power
 - 4. It rotates at a faster speed

- 6-59. Shipboard motor controllers are used for which of the following purposes?
 - 1. To start and to stop motors
 - To increase or decrease motor speed
 - To reverse the direction of a rotating shaft
 - 4. Each of the above
- 6-60. Which of the following pieces of equipment may be equipped with electric brakes?
 - 1. Anchor windlasses
 - 2. Auxiliary pumps
 - 3. Switchboards
 - 4. Generators
- 6-61. When supply voltage has been restored, what type of motor controller will (a) automatically restart the motor and (b) require manual startup?
 - 1. (a) High-voltage release
 - (b) low-voltage protection
 - 2. (a) High-voltage release
 - (b) high-voltage protection
 - 3. (a) Low-voltage release
 - (b) low-voltage protection
 - 4. (a) Low-voltage release(b) high-voltage protection
 - You should protect batteries from

salt water for which of the following reasons?

6-62.

- 1. To prevent release of poisonous gases
- To prevent the battery from being ruined
- 3. Both 1 and 2 above
- 6-63. In which of the following ways are the power and lighting distribution systems different?
 - 1. The systems have different power sources
 - 2. The power distribution system carries higher voltage
 - 3. The power distribution system's cables are more numerous
 - 4. The lighting distribution systems have larger cables

- 6-64. As required by shipboard electric safety programs, all personally owned electrical equipment must be checked before being used aboard ship.
 - 1. True
 - 2. False
- 6-65. Before repairs can be made to an electric motor, which of the following precautions must be met?
 - The controller must be tagged out
 - 2. The circuit must be disconnected
 - 3. Both 1 and 2 above
 - 4. The pump end of the motor must be disconnected
- 6-66. Heat stress is the body's inability to cope with a high-temperature and high-humidity environment. The term "heat stress" is a general term used to describe which of the following physical problems?
 - 1. Heat cramps
 - 2. Heatstroke
 - 3. Heat exhaustion
 - 4. All of the above
- 6-67. What type of heat stress is life threating?
 - 1. Heat exhaustion
 - 2. Heat cramps
 - 3. Heatstroke
- 6-68. When administering first aid to a heatstroke victim, what step should you take first?
 - Lower the victim's body temperature
 - 2. Administer a salty, cool liquid
 - 3. Cover the victim with a blanket and elevate the head
 - 4. Cover the victim with a blanket and elevate the feet

- 6-69. You should NOT take which of the following actions when working in conditions that could cause heat stress?
 - Drink commercially prepared electrolyte supplements
 - 2. Wear starched clothes
 - 3. Take salt tablets
 - 4. Each of the above
- 6-70. The ships Oil Spill Containment and Cleanup Kit (O.S.C.C.K.) consists of which of the following materials?
 - Porous mats, grappling hooks, boat hooks, metal containers, and a fire retardant
 - Porous mats, a chemical fire retardant, grappling hooks, plastic bags, and an instruction book
 - Porous mats, grappling hooks, boat hooks, plastic bags, and an instruction book
 - A chemical fire retardant, grappling hooks, plastic bags, porous mats, and an instruction book
- 6-71. Continued exposure to impulse or impact noise greater than 140 decibels can cause which of the following hearing losses?
 - 1. Normal
 - 2. Severe
 - 3. Slight
 - 4. Intermittent

- 6-72. Personnel who work with asbestos and smoke should be aware that their chances of contracting lung cancer are increased by which of the following rates?
 - 1. Tenfold
 - 2. Twentyfold
 - 3. Fiftyfold
 - 4. Ninetyfold
- 6-73. When work is being done on refrigeration systems, the area should be monitored with which of the following devices?
 - 1. A low-pressure gauge
 - 2. A flame safety lamp
 - 3. A halide monitor
 - 4. A TLV detector
 - 6-74. To alleviate the detrimental effects of shipboard sewage on the environment, which of the following devices are installed on Navy ships?
 - 1. High-concentration sewage devices
 - 2. Chemical sanitation devices
 - 3. Marine sanitation devices
 - 4. Pier-side devices
 - 6-75. Zero liquid discharge is a design feature of which of the following MSD systems?
 - 1. LHA
 - 2. Jered
 - 3. LPA
 - 4. Jiffy

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